

The Types of Drugs Used by HIV-Infected Injection Drug Users in a Multistate Surveillance Project: Implications for Intervention

ABSTRACT

Objectives. This study sought to describe the drugs used by drug injectors infected with human immunodeficiency virus (HIV) and to determine factors associated with the primary injection drug used.

Methods. A cross-section of persons 18 years of age or older reported with HIV or acquired immunodeficiency syndrome (AIDS) to local health departments in 11 US states and cities was surveyed.

Results. Of 4162 persons interviewed, 1147 (28%) reported ever having injected drugs. Of these 1147 injectors, 72% primarily injected a drug other than heroin. However, the types of drugs injected varied notably by place of residence. Heroin was the most commonly injected drug in Detroit (94%) and Connecticut (48%); cocaine was the most common in South Carolina (64%), Atlanta (56%), Delaware (55%), Denver (46%), and Arizona (44%); speedball was most common in Florida (46%); and amphetamines were most common in Washington (56%). Other determinants of the type of drug primarily injected were often similar by region of residence, except for heroin use. Polysubstance abuse was common; 75% injected more than one type of drug, and 85% reported noninjected drug use.

Conclusions. Preventing the further spread of HIV will require more drug abuse treatment programs that go beyond methadone, address polysubstance abuse, and adapt to local correlates of the primary drug used. (*Am J Public Health.* 1994;84:1971-1975)

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Introduction

Nearly one quarter of all persons with acquired immunodeficiency syndrome (AIDS) in the United States were infected through injection drug use; among women, the proportion of those so infected is nearly one half.^{1,2} Preventing the further spread of human immunodeficiency virus (HIV) among drug users requires interventions to reduce high-risk behaviors.^{3,4} Such interventions are often provided through drug abuse treatment services.⁵ However, because most of these programs target opiate users through methadone programs, they do not effectively serve persons who inject other drugs, such as amphetamines and cocaine. Yet injecting cocaine has been associated with an increased risk of HIV infection,^{6,7} and cocaine abuse has been growing.^{8,9}

To plan for effective drug intervention programs it is critical to know the types of drugs that are predominantly being injected, especially among users at risk for HIV, because drugs used by HIV-infected drug users may differ from those used by other drug users.¹⁰ In this study, we interviewed persons reported with HIV/AIDS to 11 state/local health departments to examine the types of drugs they injected. This multistate survey is unique in that we were able to examine drug use patterns in a diverse population of persons with HIV/AIDS who report injection drug use, including those persons who have not been in drug treatment.^{11,12}

Methods

Eleven health departments are collaborating with Centers for Disease Control and Prevention (CDC) in the Supplement to HIV/AIDS Surveillance Project; the methods for this ongoing project have been described elsewhere.¹³ Briefly, those eligible for interview are all persons 18 years of age or older who have been reported with AIDS (and HIV infection in states with HIV reporting) and who are medically able to complete the interview. Three procedures are used to locate persons for interviews: (1) in Arizona and South Carolina, all persons reported with AIDS or HIV infection, and in Delaware and New Mexico, all persons reported with AIDS, are contacted after permission is obtained from the state health department.

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TABLE 1—Proportion of Persons with HIV/AIDS Who Reported Ever Having Injected Drugs, by Characteristic

	No. within Total Sample (n = 4154) ^a	% Reporting Injection Drug Use (n = 1147)
Sex		
Male	3435	26
Female	719	34
Self-reported race/eth- nicity or ancestry ^b		
White	2077	24
Black	1474	33
Hispanic		
Mexican	220	19
Puerto Rican	109	54
Other His- panic	173	18
Asian/Pacific Islander	22	4
Native Ameri- can/ Alaskan Native	29	38
Other	24	29
Education ^c		
< 12 y	1074	38
≥ 12 y	3069	24
Annual house- hold in- come ^d		
< \$10 000	2251	32
≥ \$10 000	1701	24
Clinical status		
AIDS	3074	37
HIV without AIDS	1080	45
Total	4154	28

^aExcludes 8 persons who refused to answer injection drug use questions.

^bExcludes 26 persons who did not specify race or ethnicity.

^cExcludes 11 persons who did not provide information on education.

^dExcludes 2 persons who refused to reveal their income, and 200 who did not know their annual household income.

sion has been obtained from health care providers; (2) in Los Angeles and Washington, a 30% random sample of men who have sex with men plus 100% of all other persons reported with AIDS are contacted using the same procedures as above; and (3) in Connecticut, Florida, and Atlanta, all persons reported with AIDS, and in Denver and Detroit, all persons reported with AIDS or HIV

TABLE 2—Primary Drug Injected by Persons with HIV/AIDS Who Have Ever Injected Drugs, by State or City of Residence^a

	No.	Drug Type, %				
		Cocaine	Heroin	Speedball	Amphetamines	Other ^b
Florida	263	37	11 ^c	46 ^c	3 ^c	3
Denver	157	46	19	2 ^c	31 ^c	3
Detroit	145	1 ^c	94 ^c	4 ^c	1	1
Atlanta	119	56 ^c	20	9	9	5
Arizona	112	44	15	9	25	7
Los Angeles	90	25	25	14	23	13 ^c
Connecticut	89	30	48 ^c	22	0	0
Washington	85	24	12	4 ^c	56 ^c	3
South Carolina	42	64 ^c	12	10	14	0
Delaware	40	55	23	12	8	3
Total sample	1142	35	28	17	16	3

Note. Percentages are based on row totals.

^aExcludes New Mexico because only five persons interviewed reported injection drug use; these five persons are similarly excluded from the total.

^bIncludes PCP/LSD, barbiturates, steroids, and other nonspecific or unknown drugs.

^cP < .005 based on multiple (10) comparisons with the average proportion of persons injecting a specified drug.

infection who are receiving care at select medical facilities are asked to participate when they arrive for an outpatient clinic or physician appointment or are admitted to a hospital. Nearly all interviews are administered in person; 2% were conducted over the telephone during the period examined in this analysis.

Data were analyzed from questionnaires administered from June 1, 1990, through March 31, 1993, to eligible persons. All interviewees were asked about their race/ethnicity, income, education level, insurance status, sex of sex partners in past 5 years, and use of injection drugs. Those reporting injection drug use were asked, "Of drugs that you shot, which drugs did you mainly shoot (inject)?" This drug was considered the primary drug injected. Persons who injected drugs were also asked what other noninjected and injected drugs they had used, whether they had received drug treatment in the past 5 years, and whether they were currently injecting drugs. Men who reported having had sex with men were categorized in the male-male sex group, and persons having sex only with persons of the opposite sex were classified as heterosexual. Five women who reported having sex only with women were not analyzed separately because of their small number.

Because the primary type of injected drugs or other injected or noninjected drugs used did not differ by stage of infection (AIDS or HIV without AIDS) within the same state or city or by method

used to locate persons for interview, these groups were combined. Because numbers within states or cities were small, those jurisdictions were aggregated into regions according to geographic location and fairly similar drug use patterns (i.e., North = Connecticut and Detroit; South = Atlanta, Delaware, Florida, and South Carolina; and West = Arizona, Denver, Los Angeles, and Washington).

The chi-square test was used to determine significant differences by sex, race/ethnicity, sexual activity, and number of years injecting in the proportions of persons using the four most common primary drugs (heroin, cocaine, speedball [heroin and cocaine combined and thus considered a single drug], and amphetamines); *P* values of less than .05 were considered statistically significant. For multiple comparisons with the average, *P* values of .05 divided by the number of comparisons were considered statistically significant.

Results

Description of Respondents

Throughout the survey period, 5713 persons were found to be eligible for interview. Of these, 4162 (73%) completed interviews, 703 (12%) refused interview, and 848 (15%) could not be located. Compared with persons not interviewed, persons interviewed were more likely to be female (17% vs 9%) and Black (36% vs. 23%); however, the median age

was similar (35 vs 34 years). Additionally, a similar proportion of persons interviewed and not interviewed were categorized on the case report form as having been exposed to HIV through injection drug use (29% and 28%, respectively). Of the 4162 persons who completed interviews, 1147 (28%) reported any injection drug use and 8 (0.2%) refused to answer questions on drug use. By contrast, among all adult HIV and AIDS cases reported in the United States from June 1990 to March 1993, 22% of persons used injection drugs (CDC, unpublished data).

The proportion of persons who reported ever having injected drugs varied by sex, with women more likely to inject drugs, and by race/ethnicity, with Asian/Pacific Islanders reporting the lowest use and Puerto Ricans the highest (Table 1). Persons who had not completed 12 years of school and those with a household income in the past year of less than \$10 000 were more likely to report injecting drugs, as were persons with HIV infection who do not have AIDS compared with persons with AIDS.

Types of Drugs Used

Overall, cocaine was the drug most commonly injected, reported as the primary drug by 35% of respondents (Table 2). Heroin was the second most commonly used drug (28%), followed by speedball (17%) and amphetamines (16%). Two persons reported primarily injecting steroids.

However, the types of drugs injected varied notably by state or city of residence (Table 2). For example, heroin was reported as the primary drug used by nearly all (94%) drug users in Detroit and by almost half (48%) of users in Connecticut, but by 25% or less of users in all other areas. Cocaine was rarely injected in Detroit but was commonly used in other areas. Also notable was the use of speedball in Florida and the more frequent use of amphetamines in western sites (Washington, Denver, Arizona, and Los Angeles).

Most (71%) drug users reported injecting multiple drugs (Table 3). Persons who primarily injected heroin or speedball were more likely than those who primarily injected cocaine or amphetamines to report polysubstance abuse. There were some differences in secondary drug use; most heroin users also injected cocaine and speedball, while primary amphetamine users tended to also inject cocaine. Noninjected drugs were also used by more than 85% of persons who

TABLE 3—Proportion of Drug Injectors Using Other Injected and Noninjected Drugs, by Primary Drug Injected

	Primary Drug Injected, %				
	Cocaine (n = 403)	Heroin (n = 325)	Speedball (n = 195)	Amphetamine (n = 177)	Total ^a (n = 1147)
Number of injection drugs used					
1	43	19	13	32	29
2	18	11	5	27	14
3 or more	39 ^b	70	82 ^b	41	57
Type of injection drugs used					
Heroin	45	100	84	36	66
Cocaine	100	77	86	62	82
Speedball	39	69	100	17	54
Hallucinogens	4	6	6	13	7
Barbiturates	7	12	4	18	11
Amphetamines	21	14	9	100	29
Steroids	2	<1	1	3	2
Number of noninjection drugs used					
0	12	22	15	10	15
1	15	18	6	9	13
2	15	13	11	12	13
3 or more	58	47	68	69	59
Type of noninjection drugs used					
Heroin or other opiates	25	51	74	12	38
Cocaine	82	60	87	73	75
Crack	53	62	58	36	53
Smokable amphetamines	6	2	4	15	7
Valium or other benzodiazepams	29	37	26	32	31
PCP, LSD, other hallucinogens	25	14	14	39	23
Barbiturates	15	18	18	20	18
Marijuana	21	66	92	89	81
Nitrites	24	11	7	54	24
Speed	36	19	36	69	37

^aTotal includes all injectors.

^bP < .0125 based on multiple (4) comparisons with the average proportion of persons injecting at least three drugs.

injected drugs. Persons who primarily injected heroin used noninjected drugs less often than other injectors, but such use was still common (78%). The most common noninjected drugs were marijuana and cocaine, regardless of the type of drug primarily injected. For many persons, noninjected drugs used were the same as their primary injected drug. For example, about half of the heroin injectors reported noninjected heroin use, cocaine injectors frequently reported noninjected use of cocaine (82%) or crack (53%), and speedball injectors reported frequent use of both noninjected heroin (74%) and cocaine (87%). One exception was persons who primarily injected amphetamines, whose most common nonin-

jected drug was cocaine. Hallucinogens and nitrites were used more often by cocaine and amphetamine injectors.

Although the types of drugs used differed substantially by region, most characteristics associated with the type of drug used were consistent across regions (Table 4). For example, in all regions, cocaine use was significantly more common among persons who had injected for less than 20 years than in those who had injected for more, and amphetamines were more commonly used by Whites and by men who had sex with men than by other racial/ethnic groups or by those engaging in other modes of sexual activity. However, some characteristics associated with drug type did vary by region. For

TABLE 4—Primary Type of Drugs Injected, for the Four Most Commonly Used Drugs, among Persons with HIV/AIDS Who Have Ever Injected Drugs, by Region

Group ^a	South, %					North, %					West, %				
	No. ^b	Co-caine	Heroin	Speed-ball	Amphet-amines	No. ^b	Co-caine	Heroin	Speed-ball	Amphet-amines	No. ^b	Co-caine	Heroin	Speed-ball	Amphet-amines
Sex															
Male	325	47	15	26	8	149	13	75	11	1	371	38	14	5	37
Female	103	38	9	50 ^c	1 ^c	82	9	82	10	0	42	24	45 ^c	21 ^c	7 ^c
Race/ethnicity															
White (ref)	153	38	14	24	17	40	10	78	10	3	280	35	12	5	41
Black	247	49 ^c	14	35	<1 ^c	164	9	82	9	0 ^c	44	48 ^c	30 ^c	11	9 ^c
Mexican	0	... ^a	...	...	...	0	...	...	...	...	37	32	24 ^c	11	9 ^c
Puerto Rican	20	50 ^c	14	35	0 ^c	24	33	50 ^c	17	0	11	... ^a	...	...	...
Sexual activity in past 5 years^d															
Male-male sex	137	49	11	20	14	21	14	67	10	5	264	35	8	3	45
Heterosexual	269	44	15	38 ^c	2 ^c	193	11	78 ^c	10	0 ^c	128	39	33 ^c	13 ^c	13 ^c
Number of years injecting															
< 20 y	329	49	8	32	8	139	15	73	10	0	349	49	8	8	31
≥ 20 y	99	31 ^c	30 ^c	32	2	92	6 ^c	82	12	1	64	32 ^c	30 ^c	2	32
Total	428	45	14	32	6	231	12	77	11	1	413	37	17	6	31

Note. Percentages are based on row and region totals.

^aExcludes groups with fewer than 20 persons.

^bExcludes persons who injected drugs other than cocaine, heroin, speedball, or amphetamines.

^c $\chi^2 P < .05$.

^dExcludes 63 persons who reported no sex and 5 women who reported only having sex with women in the past 5 years.

example, heroin was used as the primary drug almost equally by men and women in the South, less commonly among men than among women in the West, and about equally—and most often—by men and women in the North.

Drug Treatment

Of the 671 persons who had injected drugs in the past 5 years, 361 (54%) had received some drug treatment during that time. Heroin injectors were significantly more likely to have received treatment (72% [137/190]) than were cocaine (45% [109/243]), speedball (50% [55/109]), and amphetamine injectors (45% [50/112]). After controlling for the primary drug used, there was no difference by sex, race/ethnicity, years of drug use, or region of residence in the proportion of injectors in treatment. Of the 361 drug injectors who had received drug treatment in the past 5 years, 82 (23%) reported having had difficulties obtaining drug treatment, most commonly because of long waiting lists (44%) and financial constraints (27%). Of the 310 injectors who had not received drug treatment, only 7% reported having tried unsuccessfully to enter a drug treatment program.

Discussion

The most notable finding from our survey was the striking variation in drug use patterns by site. Although it is well known that types of injected and noninjected drugs used vary by state and region, the types of drugs injected by HIV-infected drug users may or may not reflect local drug use patterns.^{9,10,14} For example, in a National Institute of Drug Abuse working group report, the most commonly used drug in Detroit is cocaine¹⁴; however, among HIV-infected persons in Detroit, our survey found that the primary injected drug was heroin. Such distinctions emphasize the importance of evaluating local drug use patterns for the appropriate planning of drug treatment services to decrease the spread of HIV. For example, because methadone treatment has been shown to be effective for persons who use opiates such as heroin, heavy reliance on methadone programs for HIV-infected injection drug users may be appropriate in certain cities such as Detroit. However, such reliance would be inadequate in areas where most HIV-infected drug users primarily inject drugs other than heroin, such as cocaine,¹⁵⁻¹⁷ which was, in fact, the most commonly

injected drug in our survey. This observation is consistent with findings that persons who inject cocaine are at higher risk for HIV than persons who inject other drugs,^{3,4} and with the substantial increase in cocaine use that occurred throughout the 1980s.^{5,6,14,18}

In addition, polysubstance abuse was extremely prevalent in this HIV-infected drug-using population. Persons who primarily injected heroin or speedball were most likely to report also having injected other drugs. On the other hand, persons who reported primarily injecting drugs other than heroin were more likely to report use of multiple noninjection drugs. This suggests that methadone and other drug treatment programs must also provide treatment for abuse of drugs other than the primary injected drug, and that research into other pharmacological and behavioral interventions for drug abuse is critical.

Within regions, drug use patterns varied among different subgroups. For example, although most persons in the North injected heroin, a substantial proportion of Puerto Ricans in the North injected cocaine. However, some differences were consistent regardless of re-

gion, especially the more frequent injection of amphetamines among Whites and among men who have sex with men. In fact, it has been found that amphetamine injectors have higher rates of HIV, and it is felt this is largely owing to the association between homosexual/bisexual behavior and amphetamine use.¹⁹ Nonetheless, our findings must be considered in light of the larger difference in overall amphetamine use by region. This survey, because of relatively small numbers of persons in each state or city, could only examine regional differences in the associations with type of drug used; these regional groupings can reflect but also may mask differences among cities and states. When resources allow, local areas must assess not only the types of drugs primarily used but also those correlates of use that may vary among different population subgroups. Only then can groups be targeted effectively for drug prevention and treatment.

Designing drug treatment programs that address local drug-use patterns and polysubstance abuse is important. However, these programs must also be available and accessible. In our survey, nearly one quarter of drug users who had received drug treatment had experienced difficulty entering treatment, primarily because of long waiting lists and lack of financial resources. Insufficient treatment slots and lack of financial support remain major obstacles to the provision of substance abuse services.¹¹

We also found that many drug users, especially those who do not primarily inject heroin, had not entered treatment, and that very few of those who had not received treatment had tried to enter treatment but were unsuccessful. This may be in part because some persons who inject drugs may not feel that they need treatment; others may not be in treatment because of the lack of effective treatment programs for drugs other than heroin. Therefore, drug treatment alone cannot halt the spread of HIV infection among drug users and their sex partners. Provi-

sion of condoms and clean needles and syringes (or bleach when clean needles and syringes are unavailable)^{20,21} are also important components of efforts to prevent the spread of HIV. In sum, these efforts will require increased provision of drug abuse treatment programs that go beyond methadone, address polysubstance abuse, and adapt to local correlates of the primary drug used. □

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